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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,437	07/27/2001	Vivek B. Nadkarni	TRMB964	9713

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EXAMINER	
LAU, TUNG S	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/917,437	NADKARNI ET AL.	
	Examiner	Art Unit	
	Tung S Lau	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-19* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 10, 17, 2, 3, 4, 11, 12, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Maughmer (U.S. Patent 4,318,300).

Regarding claim 1:

Maughmer discloses a method for simultaneously determining respective scale factors or alignment angles of sensitive axes in a multi-axis accelerometer device for measuring acceleration, comprising the steps of a) mounting a multi-axis accelerometer device on a turntable in a first orientation (col. 1-2, lines 30-3), the turntable having a tilt angle with respect to a vertical axis defined by a local gravity vector (col. 1-2, lines 30-3); b) spinning a multi-axis accelerometer device around an axis of rotation at an angular velocity using the turn table such that the multi-axis accelerometer device experiences a time varying component of the local gravity vector (col. 1-2, lines 30-3); c) receiving respective outputs of the multiple axis as the multi-axis accelerometer device experiences the time varying component of the local gravity vector (fig. 4-6); d) repeating steps (a), (b) and (c) with the multi-axis accelerometer device mounted in a second orientation (col. 1-

2, lines 30-3); and, e) repeating steps (a), (b) and (c) with the multi-axis accelerometer device mounted in a third orientation (fig. 1, unit 10, 16, 18); and, f) determining respective scale factors or alignment angles of the multiple axes of the accelerometer device by combining the respective received outputs of the accelerometer device with predicted outputs of an ideal accelerometer (col. 1-2, lines 30-3), the predicted outputs based on the tilt angle of the turntable, the angular velocity of the ideal accelerometer, and the local gravity vector (fig. 3a-3c).

Regarding claim 10:

Maughmer discloses a system for simultaneously determining respective scale factors or alignment angles of a multi-axis accelerometer device for measuring acceleration (abstract), comprising a turn table mechanism configured to mount an accelerometer device having multiple axis for calibration (col. 1-2, lines 30-3), the turntable having a tilt angle with respect to a vertical axis defined by a local gravity vector (col. 1-2, lines 30-3), the turntable configured to spin the accelerometer device around an axis of rotation at an angular velocity such that the accelerometer device experiences time varying components of the local gravity vector (col. 1-2, lines 30-3); and a processor system coupled to receive respective outputs of the multiple sensitive axes of the accelerometer device (fig. 4-6), the processor system (fig 4-6) configured to record the outputs of the accelerometer device as the device experiences the time varying components of the local gravity vector and to determine respective scale factors or alignment

angles of the multiple axis of the accelerometer device by combining the logged outputs of the accelerometer device with a predicted output of an ideal accelerometer (fig. 10-15) the predicted output based on the tilt angle of the turntable, the angular velocity of the ideal accelerometer and the local gravity vector (col. 1-2, lines 30-3, fig. 3a-3c).

Regarding claim 17:

Maughmer discloses a method for simultaneously determining respective scale factors or alignment angles of sensitive axes in a multi-axis accelerometer device for measuring acceleration, comprising the steps of a) mounting a multi-axis accelerometer device on a turntable in a first orientation (fig. 8), the turntable having a tilt angle with respect to a vertical axis defined by a local gravity vector (col. 1-2, lines 30-3); b) spinning a multi-axis accelerometer device around an axis of rotation at an angular velocity using the turn table such that the multi-axis accelerometer device experiences a time varying component of the local gravity vector (col. 1-2, lines 30-3); c) receiving respective outputs of the multiple axis as the multi-axis accelerometer device experiences the time varying component of the local gravity vector (col. 1-2, lines 30-3); d) determining respective scale factors or alignment angles of the 30 multiple axes of the accelerometer device by combining the respective received outputs of the accelerometer device with predicted outputs of an ideal accelerometer (fig. 3a-3c), the predicted outputs

based on the tilt angle of the turntable, the angular velocity of the ideal accelerometer, and the local gravity vector (col. 1-2, lines 30-3, fig. 13-14).

Regarding claims 2, 3, 4, 11, 12, 18 and 19:

Maughmer discloses a method for simultaneously determining respective scale factors or alignment angles of sensitive axes in a multi-axis accelerometer device for measuring acceleration including constant angular velocity (col. 1, lines 30-36); The accelerometer is oriented three orientation while recording data (col. 1-2, lines 30-3); The time varying components of the local gravity vector are equal to g*sin(x)*cos(y(t)) and g*sin(x)*sin(y(t)) (fig. 6, 7, 9, 10), where x is the tilt angle (Col. 1-2, Lines 30-3) , g is the acceleration due to gravity, and y is an angle subtended at the axis of rotation by the accelerometer and the component of gravity in the plane of rotation of the accelerometer (Col. 1-2, Lines 30-3); multiple-axis accelerometer mounted in second and third position (col. 1-2, lines 30-3).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a. Claims 5-8, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maughmer (U.S. Patent 4,318,300) in view of Horton et al. (U.S. Patent 6,421,622).

Maughmer discloses a method including the subject matter discussed above except the use of low pass filter, A/D converter, scale factors calculation. Horton discloses the use of low pass filter (Col. 8-9, Lines 60-12), A/D converter (fig. 2, unit 21), scale factors calculation (Col. 6, Lines 3-53, Col. 8, table 1), in order to receive and combines multiple signal for the system calculation (Col. 8-9, Lines 60-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Maughmer to have the use of low pass filter, A/D converter, scale factors calculation taught by in order to receive and combines multiple signal for the system calculation (Col. 8-9, Lines 60-12).

Claim Objections

3. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitation of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: prior art fail to teach the use of Fourier transform.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

4. Applicant's arguments filed 12/8/2003 have been fully considered but they are not persuasive.

A. Applicant argues that the prior art does not show the ' spinning a multi-axis accelerometer around an axis to produce an output that is received by a process or processor'. Maughmer shows ' spinning a multi-axis accelerometer around an axis to produce an output that is received by a process or processor' in page 1-2, lines 30-3, fig. 3a-3c.

B. Applicant argues that the prior art does teaches 'rotating turntable between fixed position and marking measurements at the fixed position. (Col. 2, Lines 64, Col. 3, Lines 48)'. Maughmer does not shows 'rotating turntable between fixed position and marking measurements at the fixed position. (Col. 2, Lines 64, Col. 3, Lines 48)'..In Col. 2, Lines 64 Maughmer discloses 'the turntable turned about

the axis'; in Col. 3, Lines 48 Maughmer discloses 'sense acceleration in y and z direction'.

C. Applicant argues that the prior art does teaches 'receiving an output from the accelerometer while the turntable is rotating at an angular velocity. Maughmer discloses teaches 'receiving an output from the accelerometer while the turntable is rotating at an angular velocity in fig. 3a-3c, fig. 9-13.

D. Applicant argues that the prior art does teaches (Maughmer fig. 1) 'angular velocity'. Maughmer discloses calculation of 'angular velocity' in Col. 10, Lines 18-25, fig. 8.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S Lau whose telephone number is 703-305-3309. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 703-308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-5841 for regular communications and 703-308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

TC2800 RightFAX Telephone Numbers : TC2800 Official Before-Final RightFAX - (703) 872-9318, TC2800 Official After-Final RightFAX - (703) 872-9319

TC2800 Customer Service RightFAX - (703) 872-9317

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